



PROPOSED REMEDIAL ACTION PLAN

Site 1, Fishing Point Landfill, and Site 12, Landfill Behind Rifle Range Operable Unit 1 (Areas A, B, C, D, and F)

This Proposed Remedial Action Plan was prepared to satisfy the public participation requirements of Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This plan explains the history of the Fishing Point Sites (Sites 1 and 12) and the type and extent of contamination found at the sites. The primary purpose of this plan is to describe the remedial alternatives evaluated for the sites and to identify Naval Air Station (NAS), Patuxent River's preferred remedial alternative. Community involvement is critical for selecting a final remedy. Public comment is invited and encouraged on the preferred alternative and the other alternatives evaluated for Sites 1 and 12. Information on how to participate in this decision making process is presented toward the end of this plan.

1 Introduction

This is the Proposed Remedial Action Plan (PRAP) for Operable Unit 1 (OU-1) at Site 1, Fishing Point Landfill, and Site 12, Landfill Behind Rifle Range. This plan provides:

- Background information on Sites 1 and 12, as developed through prior investigations (Section 2)
- A discussion of the scope and role of the response action (Section 3)
- A summary of site risks (Section 4)
- A discussion of feasible remedial methods and alternatives, as developed in the Feasibility Study (FS) (Sections 5 and 6)
- A rationale for recommending the preferred alternative and a discussion of site reuse and natural resources (Section 7)
- Opportunities for public participation (Section 8)
- A Glossary (words included in the glossary are italicized the first time they are encountered in the document)

The Navy completed field investigations and the FS to develop remedial alternatives for the landfills at Sites 1 and 12. Alternatives were developed to manage the source of contamination and reduce or eliminate human health and environmental risks associated with contamination. The alternatives considered in the FS were developed by the Navy and the US Environmental Protection Agency (EPA) Region III, in consultation with the Maryland Department of Environment (MDE). The FS evaluated four remedial alternatives. The Navy and EPA, in consultation with MDE, will finalize the remedy after evaluating comments received from the public.

The Navy has identified its preferred alternative, based on the alternatives evaluation presented in the FS. The preferred alternative includes a vegetated soil cover over the landfill areas, along with stabilization of the western shoreline of Fishing Point and removal of debris from the ravine northwest of Site 12. This alternative would meet regulatory criteria and remedial action objectives for the site, and would allow limited reuse of the area for recreation.

2 Site Background

Site 1 (Fishing Point Landfill) and Site 12 (Landfill Behind Rifle Range) are located in the north-central part of the NAS, along the Patuxent River and west of Harper's Creek. Site 1 consists of approximately 23 acres covered by sparse grasses and small trees. Figure 1 is an aerial photograph of Site 1. About 2.6 acres of *wetlands*, dominated by common reed, are present on top of

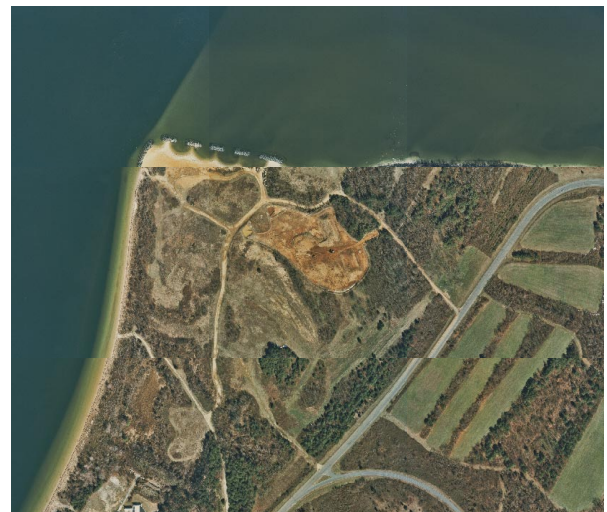


Figure 1. Current Aerial View of Fishing Point

the landfill. Site 12 consists of about 2 acres of flat, sparse grasses, with a steep slope on the west side leading down to a 3.5-acre marsh.

The unlined landfill at Site 1 was used to dispose of liquid and solid wastes generated by the NAS between 1960 and 1974. The wastes included miscellaneous residential and office trash as well as petroleum, oil, and lubricant products; construction debris; sewage treatment plant sludges; paints; solvents; pesticides; and residues from burning these materials. Site 12, also an unlined landfill, received trash and construction debris from the mid-1950s until 1960. Even though the landfill was not officially closed under State of Maryland solid waste regulations, a minimal soil cover was added on top of the waste materials.

The *groundwater* level (approximately 2 to 7 feet below ground surface) at Sites 1 and 12 lies between the bottom and top elevations of landfill wastes. Because nei-

ther landfill has a bottom liner, the groundwater is in contact with a portion of the landfill waste, thus allowing some chemical compounds from the waste to migrate into shallow groundwater.

In 1993, the Navy conducted a *removal action*. The northern shoreline of Fishing Point was stabilized to prevent erosion of landfill materials from the site into the Patuxent River. Stone breakwaters were installed to reduce the energy of waves hitting the beach, and beach fill (sand) was used to extend the beach along the edge of the landfill. Additionally, marsh grass was planted to prevent beach erosion in 1996.

For site characterization purposes, the sites and adjacent land were divided into 6 areas, each with distinct physical characteristics and types and levels of contaminants. The areas, designated "A" through "F," are shown in Figure 2. Area A covers approximately 2 acres and contains scattered debris including concrete rubble

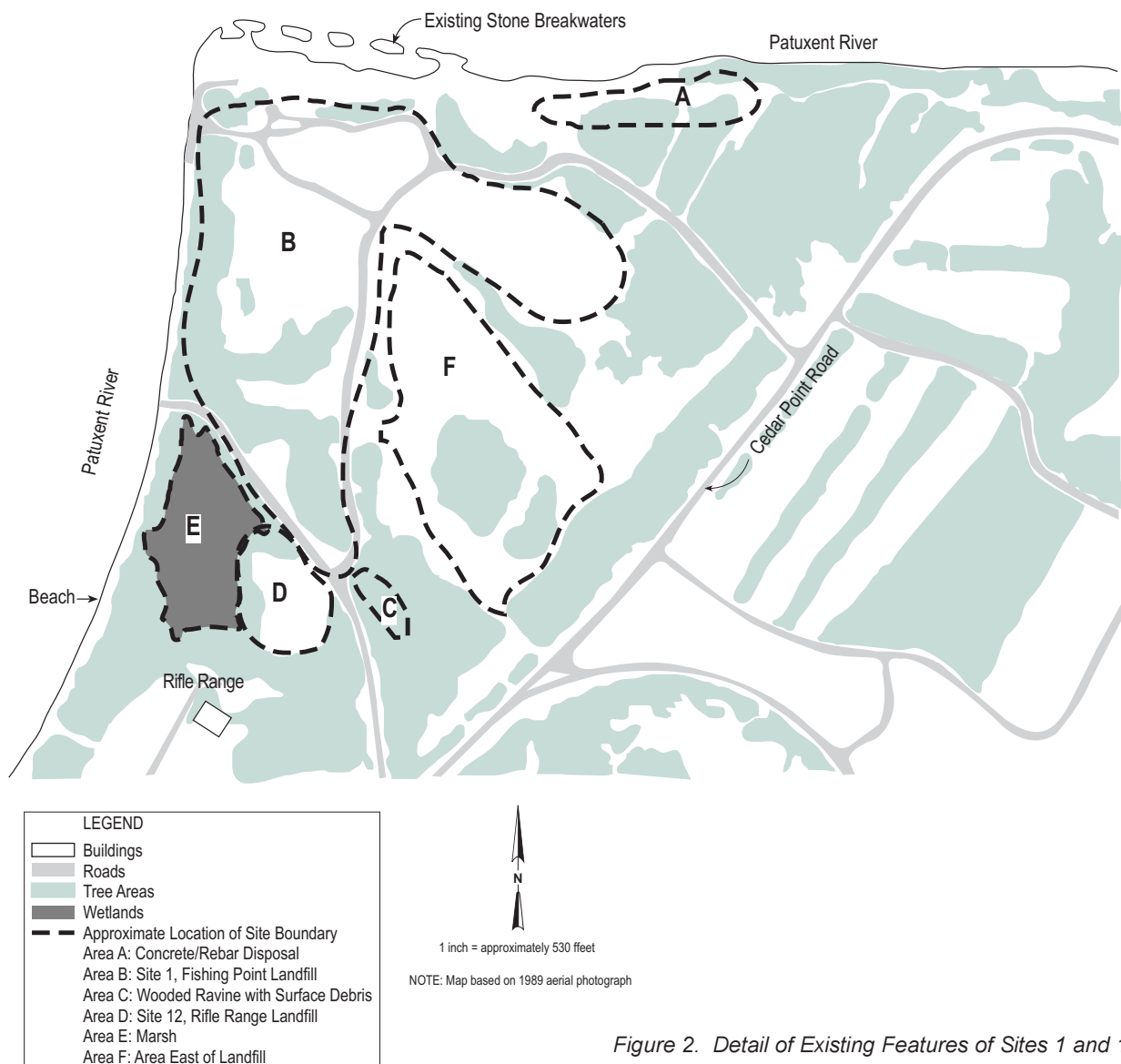


Figure 2. Detail of Existing Features of Sites 1 and 12.

and reinforcing steel. This area is considered to be clean fill material by the State of Maryland. Areas B and D (23.5 and 2.2 acres, respectively) correspond to Sites 1 and 12, respectively. Area C comprises an area of surface debris adjacent to the landfills. Area E corresponds to a 3.5-acre marsh area adjacent to Sites 1 and 12. Area F is a 10-acre grassy area east of the landfills.

On June 30, 1994, NAS Patuxent River was placed on the National Priorities List (NPL). The NPL is a nationwide list (developed by EPA) that identifies sites covered under CERCLA regulations for priority investigation and remedial action.

Summary of Previous Investigations

Investigations at Sites 1 and 12 were conducted between 1984 and 1998. The investigations are summarized in the following paragraphs:

Initial Assessment Study (IAS). The first investigation of Sites 1 and 12 was the IAS conducted in 1984. The IAS included a preliminary evaluation of potentially contaminated sites at the NAS. The IAS showed that 14 sites, including Site 1, required further evaluation to verify whether a problem existed at the sites. Site 12 was not recommended for further study because of the inert nature of materials believed to be disposed there.

Confirmation Study II. A confirmation study was conducted at Site 1 in 1985. Groundwater, *surface water*, and *sediment* samples were collected.

RCRA Facilities Assessment (RFA), Revised Phase II Report. As part of the Resource Conservation and Recovery Act (RCRA) process, in 1989 a review was conducted of NAS sites where hazardous waste was managed.

Engineering Evaluation/Cost Analysis (EE/CA). In 1992, an EE/CA was prepared to evaluate interim remedial alternatives to stabilize the eroding north shoreline of the landfill.

Specifications for the Construction of Shoreline Improvements on the Chesapeake Bay and the Patuxent River. Technical specifications were prepared in 1992 for the construction of shoreline erosion control measures.

Technical Memorandum for Site Investigation at Fishing Point Landfill. Two corroded drums were opened and sampled in 1993. Soil samples were collected from around the drums. Composite samples were collected from the concrete debris along the shoreline. This Technical Memorandum is an appendix to the Interim Remedial Investigation referenced below.

Interim Remedial Investigation (IRI). The IRI was completed in 1994. Groundwater samples were collected. In addition, *hydraulic conductivity* tests were conducted and long-term water-level measurements were collected.

Remedial Investigation (RI), Sites 1 and 12. Additional wells were installed at Sites 1 and 12 in 1996 and 1997. Groundwater, surface water, sediment, and soil samples were collected. The investigation determined that there was potential human health risk from recreational exposure to surface water in the marsh west of Site 12. Potential ecological risk was identified from metals in marsh surface water, and from metals and pesticides in marsh sediment. The investigation also identified potential human health risk in the unlikely event that shallow drinking water wells would be installed in the narrow strip of land between the landfill and the Patuxent River.

Feasibility Study (FS), Sites 1 and 12. An FS was prepared in 1998 to: (1) provide the basis for the remedial action at Sites 1 and 12; (2) evaluate and screen remedial technologies; and (3) develop remedial action alternatives based on a presumptive remedy for landfill sites (containment). In addition, additional sediment and soil samples were collected.

The documents listed above are available for public review in the information repository of the libraries listed on page 11.

3 Scope and Role of the Response Action

For Sites 1 and 12, the Navy has divided the work into two components called “operable units” (OUs). OU-1 comprises Areas A, B, C, D, and F. OU-2 comprises Area E. Creation of separate OUs was done because (1) Area E contains different contaminated *media* (surface water and sediment) than Areas A, B, C, D, and F, and (2) Area E requires further study to quantify the potential ecological risks and subsequent need for remedial action. This PRAP proposes a remedy for OU-1. After further investigation of the marsh is complete, the Navy will announce a preferred remedy for OU-2.

Based on an evaluation of site conditions, risks, and legal requirements that are applicable or relevant and appropriate requirements (ARARs), remedial action objectives (RAOs) were identified, as follows:

- Protect human health and the environment.
- Comply with all applicable or relevant and appropriate federal and state environmental laws and regulations.
- Be cost-effective.

- Use permanent solutions and alternative treatment technologies or resource recovery technologies to the extent practical.
- Prevent or minimize direct contact of human and ecological receptors with landfill contents and surface soil within the Sites 1 and 12 boundaries, and with surface debris in the adjacent areas.
- Prevent surface water run-on, control surface water runoff, and minimize erosion within the Sites 1 and 12 landfill boundaries.
- Enhance habitat through revegetation.
- Reduce further migration of contamination from the landfill to the groundwater and surface water.
- Avoid or minimize impact to existing wetlands where practical, and mitigate wetland impact.

The preferred alternative shall also maintain existing ecological habitat and develop recreational use to the extent possible, recognizing that the object of the remedial action is to prevent human and ecological exposure to waste materials in the landfill.

4 Summary of Site Risks

As part of the investigations of Sites 1 and 12, a human health risk assessment was conducted to evaluate the potential risks to human health if no actions were to be taken at the sites. In addition, an ecological screening assessment was conducted to evaluate the potential risks to ecological receptors if no action was taken at Sites 1 and 12.

The EPA Office of Emergency and Remedial Response has streamlined the FS process for specific classes of sites with similar characteristics, such as types of contaminants present, types of disposal practices, or how environmental media are affected. One such class of sites is landfills, such as at Areas B and D. Landfill sites share similar characteristics; therefore, presumptive remedies are used to ensure consistency in remedy selection and to reduce the cost and time required to clean up similar types of sites. Sites 1 and 12 are landfills in which co-disposal of hazardous and municipal waste occurred, but the location of highly toxic and/or mobile material is not known. The presumptive remedy for such landfills is containment (a soil cover or cap).

There is currently only a thin soil cover over the landfill material. Human or ecological receptors could be exposed to physical hazards due to direct contact with landfill materials.

Human Health. The human health risk assessment evaluated potential risks to employees, visitors, and

residents (adults and children), both current and future, based on several scenarios whereby exposure to contamination on site could occur. Potential risks due to exposure to marsh surface water and sediment will be discussed and addressed as part of OU-2 and are not presented here.

The risk assessment identified all chemicals that are found in concentrations that have greater than 1 chance in 1,000,000 of causing cancer in or otherwise harming an individual. Acceptable risk generally means that an individual would have an increased risk of developing cancer of less than 1 chance in 10,000 as a result of exposure to site contaminants. All of the current and future carcinogenic risks evaluated in this assessment are below or within the EPA's acceptable risk range.

Noncancer risks also were evaluated to determine whether site contaminants could cause other adverse health effects. Certain metals in groundwater in the St. Mary's formation are found at levels that would be of concern in drinking water. However, the shallow *aquifer* would experience *brackish water* intrusion downgradient of the landfills if pumped routinely, making water withdrawn from these deposits non-potable. As a result, shallow groundwater on the downgradient side of the landfill is Class III (non-potable). In addition, St. Mary's County prohibits installation of drinking water wells within the shallow aquifer throughout the NAS. All of the current and reasonable future use scenarios are below EPA's noncancer acceptable level. However, landfill contents are presumed to present risks to humans and were not specifically evaluated (following EPA guidance on presumptive remedies for municipal landfills).

The results of the human health risk assessment are summarized in Table 1.

Table 1
Human Health Risk Assessment Results

Medium	Human Health Risks
Soil (inside landfill perimeter)	Presumed risk*
Soil (outside landfill perimeter)	Acceptable
Groundwater	Acceptable**
Surface Water (Patuxent River)	Acceptable
Sediment (Patuxent River)	Acceptable

*Landfill contents are presumed to present risks to humans and were not specifically evaluated.

**No reasonable human exposure scenario, therefore risks associated with groundwater are considered to be negligible.

Additional hazards are posed to human and ecological receptors by the proximity of landfill debris to the surface. In most cases, only a thin layer of soil cover separates the landfill from trespassers. Several areas contain exposed surface debris that could pose a physical hazard to recreational users and trespassers. Samples of the landfill debris itself were not collected for analysis because they are presumed to present a risk. The presumptive remedy of containment for municipal landfills minimizes risk to humans by eliminating the pathway of exposure.

In addition, according to Maryland Solid Waste regulations, the material in Area A is considered to be 'clean fill'. The human health risk assessment indicated no unacceptable risks from exposure to soil in this area. Therefore, no remedial action will be proposed for Area A. A separate evaluation is currently under way to determine whether any release occurred from the debris within the 0.25 acres of Area C, and if so, whether the soils pose a potential risk to humans.

Ecological. A screening-level ecological risk assessment was conducted to characterize ecological risks from soil, sediment, and surface water at Sites 1 and 12 if no additional remedial action is taken. In conducting the screening-level ecological risk assessment for Sites 1 and 12, contaminants of potential concern (COPCs) were identified using benchmark screening levels. The potential exposure of selected environmental receptors to each COPC was then evaluated.

Potential risk from surface soil within the landfills was not evaluated because the presumptive remedy of containment would eliminate the exposure pathway for ecological receptors.

Potential risks from marsh surface water and sediment are not addressed in this PRAP, since the marsh (Area E) is not included in OU-1. Further ecological study will be conducted for Area E to determine whether ecological receptors may be exposed to unacceptable levels of contamination.

Potential ecological risk was identified in river surface water and sediment. This potential risk was not evaluated further because metals and pesticides detected in the river surface water and sediment appear to be within the acceptable background range.

Slightly elevated metal concentrations were detected in soil at Area F during sampling. Review of the historical record for the landfills reveals that Area F was used as a source of soil to cover the landfills. After the soil was removed from Area F, the area received an application of solid waste sludge from the St. Mary's County Metro-

politan Commission (the municipal waste water treatment facility). The sludge application was permitted by the State of Maryland. Although some metals in soil from Area F slightly exceed the conservative screening levels used in ecological risk assessments, the soil was not evaluated further because it will be used as the base for the final vegetated soil cover on the landfills. By using the soil from Area F as the base for the final vegetated cover, the pathway of exposure for ecological receptors is minimized. Therefore, no further action or study is required at Area F.

In addition, an ecological evaluation showed that no compounds were present above background levels for Area A. A separate evaluation is currently under way to determine whether any release occurred from the debris within the 0.25 acres of Area C, and if so, whether any soil in addition to the debris needs to be removed. The conclusions of this evaluation will be documented in the public record at a future date.

5 Summary of Alternatives

This section presents a summary of the remedial alternatives developed in the FS for Sites 1 and 12 that will meet the RAOs. The alternatives developed were based on a presumptive remedy for landfill sites (containment). A detailed analysis of the possible remedial alternatives is presented in the FS report. The analysis was conducted in accordance with EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The remedial alternatives presented below are modified slightly from the FS because Area E will not be remediated under OU-1. As a result, two of the five alternatives considered in the FS are not presented because they are the same as alternatives shown below. The following alternatives discuss remedial actions only in Areas B, C, and D.

Alternative 1—No Action: The no-action alternative is required to be evaluated under CERCLA. Under this alternative, no action would be performed to reduce the toxicity, mobility, or volume of contamination at Sites 1 and 12. Contaminants at the site would be left where they are. The no-action alternative serves as a baseline against which the effectiveness of the other alternatives is compared.

Alternative 2—Installation of a Soil Cover over Areas B and D; Excavation and Offsite Disposal of Contaminated Material and Debris from Area C; and Institutional Controls and Long-Term Monitoring: Under Alternative 2, a soil cover with minimum 2 percent grade

would be placed over Areas B and D. The soil cover would consist of a minimum of 18 inches of subsoil and 6 inches of topsoil capable of supporting vegetation. Approximately 2.6 acres of wetlands would be eliminated in Area B as a result of installing the soil cover. In addition, about 1 acre of Area E would be eliminated during the installation of the soil cover. The wetland loss would be replaced, at a minimum one-for-one, either onsite or elsewhere on the NAS. Surface debris and contaminated soil would be excavated from Area C and disposed of in an offsite disposal facility. Institutional controls would consist of (1) access restrictions to prevent trespassing and disturbance to the cap, and (2) land use restrictions (in the event of sale of property to a private party) to control site development (including restriction of access to groundwater). Monitoring also would be conducted to assess the migration of contaminants into the environment. Routine operations and maintenance would be performed to promote long-term stability of the soil cover. A review would be conducted every 5 years to evaluate whether human health and the environment continue to be protected. Shoreline stabilization measures would be implemented along the western boundary of Area B to minimize erosion and to protect the soil cover from erosion in the case of severe storms. In the FS, Alternative 2 included the excavation of contaminated sediment from Area E. Since Area E is no longer included in the OU covered by this PRAP, Area E would not be remediated under Alternative 2.

Alternative 3—Installation of a Resource Conservation and Recovery Act (RCRA) Subtitle D Cap Over Areas B and D; Excavation of Contaminated Material and Debris from Area C, and Disposal in Areas B and D; and Institutional Controls and Long-Term Monitoring: Under Alternative 3, a RCRA Subtitle D cap would be installed over Areas B and D. The RCRA Subtitle D cap would consist of 6 inches of topsoil, 18 inches of vegetative support, a 12-inch gravel drainage layer, a geosynthetic membrane, and 6 inches of bedding soil. The cap would be designed with minimum 5 percent grade and maximum 3:1 grade to promote drainage and ensure stability in accordance with RCRA design guidelines. Approximately 3.6 acres of wetlands (2.6 acres in Area B, 1 acre in Area E) would be eliminated as a result of installing the cap. The wetland loss would be replaced, at a minimum one-for-one, either onsite or elsewhere on the NAS. Surface debris and contaminated soil would be excavated from Area C and disposed of in Areas B and D. Institutional controls implemented under Alternative 3 would be identical to those for Alternative 2. Routine operations and maintenance would be performed to promote long-term stability of

the RCRA Subtitle D cap. A review would be conducted every 5 years to evaluate whether human health and the environment continue to be protected. Shoreline stabilization measures would be implemented along the western boundary of Area B to stabilize the eroding shoreline and to protect the cap from damage in the case of severe storms. In the FS, this alternative included the excavation of contaminated material from Area E. Since Area E is no longer included in the OU covered by this PRAP, Area E would not be remediated under Alternative 3.

6 Evaluation of Alternatives

The NCP outlines the approach for comparing remedial alternatives. Evaluation of the alternatives uses “threshold”, “primary balancing”, and “modifying” criteria. All alternatives are evaluated against the threshold and primary balancing criteria, which are technical criteria based on human health and environmental protection, cost, and engineering feasibility. To be considered for remedy selection, an alternative must meet the two threshold criteria:

1. Overall protection of human health and the environment
2. Compliance with ARARs

The primary balancing criteria then are considered to determine which alternative provides the best combination of attributes. The primary balancing criteria are:

1. Long-Term Effectiveness and Permanence
2. Reduction in Toxicity, Mobility, or Volume through Treatment
3. Implementability
4. Short-Term Effectiveness
5. Cost

The preferred alternative is evaluated further against two modifying criteria:

1. Acceptance by the State
2. Acceptance by the community

The remedial alternatives presented in Section 5 were evaluated in the FS against the threshold and primary balancing criteria identified in the NCP. The two additional modifying criteria are evaluated after the *public comment period* for the PRAP.

Table 2 presents a comparison of the alternatives. The summary analysis and evaluation of the nine criteria are presented below. The FS provides a more detailed analysis and evaluation.

Threshold Criteria

Overall Protection of Human Health and the Environment. Alternative 1 (no action) will not protect human health or the environment from contamination at the site. It will, therefore, not be considered further in this analysis. The soil cover and RCRA Subtitle D designs required by Alternatives 2 and 3, respectively, would prevent direct contact of human and ecological receptors with landfill contents and with surface debris in the adjacent areas. Both alternatives would minimize surface water run-on, and control surface water runoff and erosion within the Site 1 and 12 landfill boundaries. Alternative 3 would be the most protective because the RCRA Subtitle D cap would reduce surface water infiltration through the landfill to the greatest

extent of the alternatives under consideration. Both Alternative 2 and Alternative 3 would allow reuse of the site for limited recreation while protecting human health and the environment. However, under Alternative 3 the RCRA Subtitle D cap would need a greater degree of protection in order to maintain its integrity, and recreational activities that could puncture or degrade the cap would not be permitted.

Compliance with ARARs. Alternative 3 would comply with ARARs. Under Alternative 2, the construction of a 2-foot soil cover (instead of a RCRA Subtitle D cap) requires a variance from the State of Maryland's final cover design specifications for landfill closure (Code of Maryland Regulations [COMAR] 26.04.07). The variance is appropriate because a soil cover would prevent contact of human and ecological receptors with landfill debris as effectively as a RCRA Subtitle D cap, and because there are no current or reasonable future exposure pathways to shallow groundwater for human or environmental receptors. Groundwater *downgradient*

Table 2

Features of Alternatives for Operable Unit 1—Sites 1 and 12

Alternative	Main Components	Applicable Standards	Cost Present Worth, \$
1 NoAction	None	Does not meet RAOs	\$ 0
2 Soil cover over Areas B and D; excavate and dispose material from Area C offsite.	<ul style="list-style-type: none"> - Placement of soil cover over Areas B and D consisting of a minimum of 18 inches of subsoil overlain by a minimum of 6 inches of top soil - Excavation and offsite disposal of material from Area C - Mitigate 3.6 acres of wetlands - 10 months to construct cover 	<ul style="list-style-type: none"> - Meets all RAOs - Would require a variance for one ARAR: State of Maryland's final cover design specifications for landfill closure 	\$4,590,000
3 RCRA Subtitle D cap over Areas B and D; excavate and dispose material from Area C under Areas B and D cap.	<ul style="list-style-type: none"> - Placement of RCRA Subtitle D cap over Areas B and D consisting of a minimum of 6 inches of topsoil, a minimum of 18 inches of vegetative support, 12-inch drainage layer, geosynthetic membrane, and 6 inches of bedding soil - Excavation and disposal of material from Area C under the Areas B and D cap - Mitigate 3.6 acres of wetlands - 10 months to construct cap 	<ul style="list-style-type: none"> - Meets all RAOs except for cost-effectiveness - Meets all ARARs 	\$8,440,000

of the landfill is designated Class III (non-potable) due to brackish water intrusion that would occur if shallow groundwater were pumped. In addition, a RCRA Subtitle D cap would not prevent groundwater from being in direct contact with landfill waste, since the *water table* is primarily controlled by the water level of the Patuxent River and not by the amount of surface water infiltration. Therefore, a RCRA Subtitle D cap would not reduce risks to human health or the environment to a significantly greater extent than a soil cover. Groundwater would continue to be monitored under Alternative 2 to ensure that contaminant levels do not increase significantly over current concentrations. Additional justification for this variance is provided in the FS. Following federal regulations requiring that wetlands impacted by Alternative 2 or Alternative 3 be mitigated (Code of Federal Regulations, 40CFR230 and 231), any wetlands impacted by site remediation will need to be replaced at least one-for-one elsewhere on the NAS. Although Executive Order 60FR154 (8/10/94), Office of the Federal Environmental Executive (Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds) is not an ARAR, it must be considered in selection and implementation of any selected remedy. In accordance with this executive order, native species will be used to vegetate the landfill cover.

Primary Balancing Criteria

Long-Term Effectiveness and Permanence. Alternatives 2 and 3 would be effective in the long term. Alternative 3 may be slightly more effective in the long term than Alternative 2 because of the increased protection from surface water infiltration that Alternative 3 would provide to groundwater in Areas B and D. However, the reduction of surface water infiltration may not improve long-term groundwater quality significantly, since groundwater already comes in contact with the waste material in Areas B and D. In addition, the groundwater pathway has no significant exposure pathway. Both Alternatives 2 and 3 would reduce the risk associated with Area C because contaminated materials in that area would be excavated and disposed. Land use restrictions and long-term monitoring would reduce residual risk by preventing future disturbances of capped media and by monitoring for contaminant migration, respectively. A RCRA Subtitle D cap or vegetated soil cover over Areas B and D would not remove contaminated material from these areas. The long-term effectiveness and permanence of Alternatives 2 and 3 would depend on the long-term maintenance of the cap or soil cover.

Reduction in Toxicity, Mobility, or Volume through Treatment. Alternatives 2 and 3 would not use treatment to reduce the toxicity, mobility, or volume of the landfill materials, due to the heterogeneity of the landfill contents. Although Alternative 3 (RCRA cap) would provide more protection from infiltration than Alternative 2 (soil cover), groundwater quality under Alternatives 2 and 3 would not differ greatly because landfill waste already extends below the water table.

Implementability. Alternative 2 would be easier to implement than Alternative 3. Under Alternative 3, a specialty contractor would be required to install a RCRA Subtitle D cap. For the vegetated soil cover under Alternative 2, a specialty contractor would not be required. Land use restrictions and 5-year site reviews would be required for all alternatives because contaminated material would remain onsite following remedial action.

Short-Term Effectiveness. Alternatives 2 and 3 could expose workers to contaminated material and debris. Under both alternatives, a significant amount of construction activity, including excavation, handling of construction debris, surface debris, and soil would be required, so the potential for fugitive dust and impacts from air emissions would exist. Exposure risk could be minimized by wearing personal protective equipment and by implementing dust and emission controls. Implementation of these alternatives would result in minimal increased risk to the surrounding community and ecosystems over current conditions because landfill contents would remain in place. Both alternatives would require approximately the same amount of time (10 months) to implement.

Cost: The total estimated *present-worth cost* of Alternative 2 is \$4,590,000. The estimated present-worth cost of Alternative 3 is \$8,440,000.

Modifying Criteria

State of Maryland Acceptance. The MDE has reviewed the PRAP and supports the Navy's preferred alternative. However, their final concurrence with the alternative will be provided following review of all comments received during the public comment period.

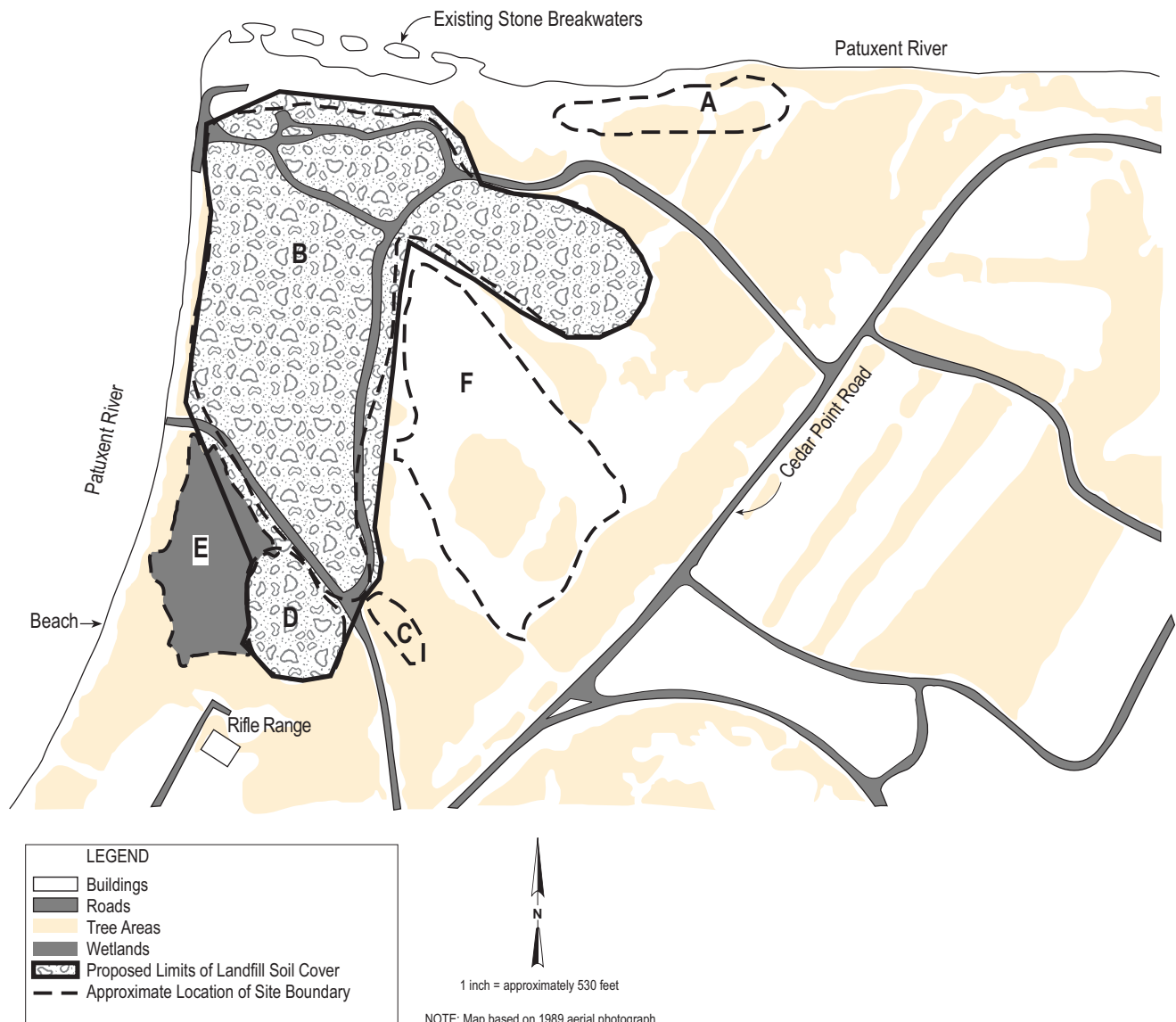
Community Acceptance. Community acceptance of the preferred alternative will be evaluated after the public comment period ends. All public comments will be addressed in the responsiveness summary prepared for the *Record of Decision (ROD)* for Sites 1 and 12.

7 Preferred Alternative

The Navy's preferred alternative is Alternative 2. The preferred alternative can change in response to public comments or new information. Alternative 2, displayed conceptually in Figure 3, meets the RAOs. A vegetated soil cover over Areas B and D would minimize direct contact of human and *ecological receptors* with contaminated landfill contents, and the soil cover would reduce further contamination of groundwater to a limited extent. Alternative 2 would allow recreational use of the area, as the NAS has requested, to a greater extent than Alternative 3.

Alternative 2 will address contamination at Sites 1 and 12 cost-effectively. Although a RCRA Subtitle D cap, included in Alternative 3, would reduce surface water infiltration more effectively than the soil cover under Alternative 2, the RCRA cap is unlikely to greatly improve overall groundwater quality because waste in the landfill lies below the water table. A potential reduction in groundwater contamination may not be worth the substantial additional cost of a RCRA cap because there is no reasonable pathway for human exposure to groundwater, and groundwater contamination does not pose a risk to ecological receptors.

Figure 3. Detail of Preferred Alternative for Sites 1 and 12.



In addition to meeting the RAOs, Alternative 2 includes stabilization measures along the western shoreline of Site 1. The stabilization measures would preserve habitat along the shoreline to the extent possible, and maintain access to the western beach for recreational use. Stabilization of the shoreline is necessary to prevent further erosion along the western edge and northwestern corner of Site 1, and to prevent damage to the soil cover or cap in the event of a severe storm. The design of the shoreline stabilization would be integrated into the vegetated soil cover design to manage stormwater runoff effectively, and would preserve existing habitat to the extent possible.

The preferred alternative satisfies the following statutory requirements of CERCLA 121b:

- Protection of human health and the environment,
- Compliance with ARARs of federal and Maryland environmental laws, and
- Cost-effectiveness.

Due to the heterogeneity and volume of the landfill contents and debris in Areas B, C, and D, a treatment response action was not considered for these areas. For this reason, the preferred alternative does not satisfy the statutory preference for treatment.

8 Participation

A community relations program is being conducted through the installation restoration process. Public input is a key element in the decision making process. Nearby residents and other interested parties are strongly encouraged to use the comment period to raise questions and concerns that they may have about Sites 1 and 12, the proposed remediation alternatives, and the preferred alternative. The Navy will summarize and respond to comments in a responsiveness summary, which will become a part of the official Record of Decision (ROD).

This PRAP fulfills the public participation requirements of CERCLA Section 117(a), which specifies that the lead agency (the Navy) must publish a plan outlining remedial alternatives evaluated for the site and identifying the preferred alternative. The remediation alternatives are presented in detail in the FS.

A restoration advisory board (RAB) was formed in 1995. Meetings continue to be held to provide an information exchange among community members, the EPA, MDE and the Navy. The meetings are open to the public and are held about every three months.

Public Comment Period

The public comment period for the PRAP gives the public an opportunity to provide input regarding the source control and risk reduction process for Sites 1 and 12. The public comment period will be from November 1, 1999, to November 30, 1999. The public meeting will be held at 6:30 pm on November 9, 1999, at the Frank Knox Training Center, Building 2189. This facility is located outside of Gate 2 at the intersection of Rt. 235 and Great Mills Road. All interested parties are encouraged to attend the meeting to learn more about the alternatives developed for the site. The meeting will provide an additional opportunity to submit comments on the PRAP to the Navy.

During the comment period, interested parties may submit written comments to the following address:

Commanding Officer

Attention: Environmental Support Group,

Ms. Joan Hinson

22445 Peary Road

Building 504

Patuxent River, Maryland 20670

Comments must be postmarked no later than November 30, 1999. Based on comments or new information, the Navy may modify the preferred alternative or choose another of the alternatives developed in the FS.

Record of Decision

At the conclusion of the public comment period, the Navy, in consultation with the EPA and MDE, will determine whether the PRAP should be modified based on the comments received. These modifications, if required, will be made by the Navy and reviewed by the EPA and MDE. If the modifications substantially change the proposed remedy, additional public comment may be solicited. If not, then the EPA and Navy will prepare and sign the ROD. The ROD will detail the remedial actions chosen for the site and include the Navy's responses to comments received during the public comment period. Once the design is complete and a remedial action contractor is procured, the remedial actions will begin.

The Community Relations Plan, Installation Restoration (IR) fact sheets, and final technical reports (including the FS report) are available to the public at the following locations:

Lexington Park Public Library

1 Coral Place
Lexington Park, Maryland 20653
Phone (301) 863-8188

Hours of Operation:

Monday through Thursday 9:00 am to 8:00 pm
Friday 12:00 noon to 5:00 pm
Saturday 9:00 am to 1:00 pm

Patuxent River Naval Air Station Library

Cedar Point Road
Patuxent River, Maryland 20670
Phone (301) 342-1927

Hours of Operation:

Monday through Thursday 8:30 am to 6:00 pm
Friday 8:30 am to 5:00 pm



For more information about the
Installation Restoration Program
or to be added to the mailing list, please call Ms. Joan Hinson,

Environmental Public Affairs, at (301) 757-4814.

or see the environmental web site at:

www.nawcad.navy.mil/environmental

Glossary

ARARs — Applicable or Relevant and Appropriate Standards, Limitations, Criteria, and Requirements; these are federal or state environmental rules and regulations.

Aquifer — A body of rock or soil that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

Brackish Water — Water with a salt content between that of normal seawater and that of normal freshwater.

CERCLA — Comprehensive Environmental Response, Compensation, and Liability Act (1980), also known as the Superfund Law, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). CERCLA provides the organizational structure and procedures for responding to releases of hazardous substances, pollutants, and contaminants from inactive hazardous waste disposal sites.

COPC — Contaminant of Potential Concern. Chemical compounds identified early in the risk assessment process that may pose a risk to human health or the environment at detected concentrations.

Downgradient — Toward the bottom of a slope.

Ecological Receptors — Living organisms (other than humans and domesticated animals) that could be affected by a contaminant in the environment.

EPA — United States Environmental Protection Agency.

FS — Feasibility Study — Analysis of the practicability of a proposal; e.g., a description and analysis of potential cleanup alternatives for a site such as one on the National Priorities List. The feasibility study usually recommends selection of a cost-effective alternative. It usually starts as soon as the remedial investigation is under way. Together they are commonly referred to as the “RI/FS.”

Groundwater — Water that is found below the ground surface.

Hydraulic Conductivity — Property of soil or rock characterizing the rate at which water can flow through the material.

Institutional Controls — Administrative methods to prevent human exposure to contaminants, such as by restricting land development.

IRI — Interim Remedial Investigation—Similar to a Remedial Investigation, but carried out prior to listing on the NPL. An in-depth study designed to gather data

needed to determine the nature and extent of contamination at a site, establish site cleanup criteria, identify preliminary alternatives for remedial action, and support technical and cost analyses of alternatives.

MDE — Maryland Department of the Environment.

Media — Soil, groundwater, surface water, or sediment at a site.

NCP — National Oil and Hazardous Substances Pollution Contingency Plan. The NCP provides the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

OU — Operable Unit — Term for each of a number of separate activities undertaken as part of a Superfund site cleanup. For example, cleanup of soil and groundwater could be two separate operable units.

Present-Worth Cost — Total cost, in current dollars, of the remedial action. The present-worth cost includes capital costs required to implement the remedial action, as well as the cost of long-term operation, maintenance, and monitoring.

Public Comment Period — The time allowed for the members of an affected community to express views and concerns regarding an action proposed to be taken by EPA, such as a rulemaking, permit, or Superfund remedy selection.

RAB — Restoration Advisory Board— An advisory board, consisting of community members, designed to act as a focal point for the exchange of information between the NAS and the local community regarding environmental restoration activities.

RAOs — Remedial Action Objectives — Objectives of remedial actions which are developed based on contaminated media, contaminants of concern, potential receptors and exposure scenarios, human health- and ecological-risk assessment, and attainment of regulatory cleanup levels, if any exist.

RCRA — Resource Conservation and Recovery Act. A 1976 regulation of the management of hazardous waste to ensure the safe disposal of wastes. The intent of the RCRA program is to protect public health and the environment by controlling hazardous waste.

Record of Decision (ROD) — A public document that determines which cleanup alternative(s) will be used at National Priorities List sites.

Removal Action — Short-term immediate actions taken to address releases of contamination that require quick and timely response.

Sediment — Solid material transported by water that is deposited in layers along channels of flow.

Surface Water — Water that occurs on the ground surface, usually in the form of a lake, stream, river or other body of water.

Water Table — The surface between the zone of saturation and the zone of aeration; that surface of a body of unconfined groundwater at which the pressure is equal to that of the atmosphere.

Wetlands — An area of land characterized by swamps, marshes, or flora and fauna that prefer wet environments.

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Commanding Officer
Attention: Environmental Support Group,
Ms. Joan Hinson
22445 Peary Road
Building 504
Patuxent River, Maryland 20670

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